HOME GRAPH

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims priority under 35 U.S.C. § 120 to, and is a continuation of, U.S. non-provisional patent application Ser. No. 16/216,357, filed on Dec. 11, 2018, entitled "Home Graph," which is incorporated herein by reference in its entirety.

[0002] U.S. non-provisional patent application Ser. No. 16/216,357 claims the benefit under 35 U.S.C. § 119 of U.S. provisional App. No. 62/597,355 filed on Dec. 11, 2017, entitled "Home Graph," which is incorporated herein by reference in its entirety.

FIELD OF THE DISCLOSURE

[0003] The disclosure is related to consumer goods and, more particularly, to methods, systems, products, features, services, and other elements directed to voice control of media playback or some aspect thereof.

BACKGROUND

[0004] Options for accessing and listening to digital audio in an out-loud setting were limited until in 2003, when SONOS, Inc. filed for one of its first patent applications, entitled "Method for Synchronizing Audio Playback between Multiple Networked Devices," and began offering a media playback system for sale in 2005. The Sonos Wireless HiFi System enables people to experience music from many sources via one or more networked playback devices. Through a software control application installed on a smartphone, tablet, or computer, one can play what he or she wants in any room that has a networked playback device. Additionally, using the controller, for example, different songs can be streamed to each room with a playback device, rooms can be grouped together for synchronous playback, or the same song can be heard in all rooms synchronously.

[0005] Given the ever-growing interest in digital media, there continues to be a need to develop consumer-accessible technologies to further enhance the listening experience.

BRIEF DESCRIPTION OF THE DRAWINGS

[0006] Features, aspects, and advantages of the presently disclosed technology may be better understood with regard to the following description, appended claims, and accompanying drawings where:

[0007] FIG. **1** shows a media playback system in which certain embodiments may be practiced;

[0008] FIG. **2**A is a functional block diagram of an example playback device;

[0009] FIG. **2**B is a isometric diagram of an example playback device that includes a network microphone device;

[0010] FIGS. **3**A, **3**B, **3**C, and **3**D are diagrams showing example zones and zone groups in accordance with aspects of the disclosure;

[0011] FIG. **4** is a functional block diagram of an example controller device in accordance with aspects of the disclosure;

[0012] FIGS. **4**A and **4**B are controller interfaces in accordance with aspects of the disclosure;

[0013] FIG. **5**A is a functional block diagram of an example network microphone device in accordance with aspects of the disclosure;

[0014] FIG. **5**B is a diagram of an example voice input in accordance with aspects of the disclosure;

[0015] FIG. **6** is a functional block diagram of example remote computing device(s) in accordance with aspects of the disclosure;

[0016] FIG. **7** is a functional block diagram of an example VAS in accordance with aspects of the disclosure;

[0017] FIGS. **7**A and **7**B are representations of example hierarchies in accordance with aspects of the disclosure;

[0018] FIG. **8**A is a functional block diagram of an example auto-generation engine **800** in accordance with aspects of the disclosure;

[0019] FIG. **8**B is a representation of an example media playback system using a home graph hierarchy in accordance with aspects of the disclosure;

[0020] FIG. **9**A is a flow diagram of an example method for invoking a voice assistant service in accordance with aspects of the disclosure;

[0021] FIG. **9**B is a block diagram of an example set of command information in accordance with aspects of the disclosure;

[0022] FIGS. **9**C, **9**D, and **9**E are tables with example voice input commands and associated information in accordance with aspects of the disclosure;

[0023] FIG. **9**F is an example data structure of a home group hierarchy in accordance with aspects of the disclosure;

[0024] FIGS. **10**A, **10**B, and **10**C are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0025] FIGS. **11**A and **11**B are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0026] FIGS. **12**A and **12**B are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0027] FIGS. **13**A and **13**B are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0028] FIGS. **14**A and **14**B are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0029] FIGS. **15**A and **15**B are diagrams showing example voice inputs for invoking a VAS in accordance with aspects of the disclosure;

[0030] FIGS. **16**A, **16**B, **16**C, **16**D, **16**E, **16**F, **16**G, and **16**H are diagrams showing example control interfaces for home graph targeting in accordance with aspects of the disclosure;

[0031] FIGS. **17**A and **17**B are diagrams showing example control interfaces for home graph volume control in accordance with aspects of the disclosure;

[0032] FIG. **18** shows a technique to generate a home graph hierarchy from an existing zone hierarchy;

[0033] FIG. **19** shows a technique to facilitate VUI control via a home graph hierarchy; and

[0034] FIG. **20** shows a technique to facilitate GUI control via a home graph hierarchy.

[0035] The drawings are for purposes of illustrating example embodiments, but it is understood that the inventions are not limited to the arrangements and instrumentality shown in the drawings. In the drawings, identical reference numbers identify at least generally similar elements. To facilitate the discussion of any particular element, the most